

REMARKS

The Applicants note that the Office Action does not acknowledge the Information Disclosure Statement filed on December 12, 2001. Acknowledgment is respectfully requested.

Claims 1-22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Forbes, *et al.* (U.S. Patent Number 5,926,740) and Loboda, *et al.* (U.S. Patent Number 5,818,071). In view of the amendments to the claims and the following remarks, the rejection is respectfully traversed, and reconsideration of the rejection is requested.

The claims are amended to clarify the distinctions between the invention and the cited Forbes, *et al.* and Loboda, *et al.* references. Specifically, the claims are amended to clarify that the silicon oxycarbide layer of the invention is formed by plasma-enhanced chemical vapor deposition (PECVD) while a layer formation source gas used in providing the atoms for formation of the silicon oxycarbide layer as well as a plasma source gas used in generating the plasma are introduced into the chamber. The claims are also amended to clearly require that while the plasma treatment on the completed silicon oxycarbide layer is being performed, the layer formation source gas is not being introduced into the chamber. That is, the plasma treatment of the invention is not part of the process of layer formation by PECVD. These features of the invention set forth in the amended claims are neither taught nor suggested by the combination of the Forbes, *et al.* and Loboda, *et al.* references.

PECVD, such as that disclosed by Forbes, *et al.* and that used to form the silicon oxycarbide layer of the invention, is used in forming layers. The plasma used in PECVD supplies the reaction energy required for activating the layer formation processing gases, for example, silane gas used as a source gas in forming a silicon oxide layer. By using plasma, the layer can be deposited at a lower temperature than would be required in CVD without plasma. In contrast to the PECVD used in Forbes, *et al.*, which uses a layer formation source gas along with plasma throughout the entire disclosed process, the plasma treatment of the invention, used to treat the claimed silicon oxycarbide layer after the PECVD process used in forming the layer is completed, is used to change the properties of the completed layer. It is not used in forming a layer, as is the Forbes, *et al.* plasma, and, as a result, it is introduced into the chamber without a layer formation source gas. Thus, the processing gas used in the plasma treatment of the invention includes materials having no connection

with formation of a layer. Examples of such plasma gases used in the invention are He, H, N₂O, O₂ and Ar. In contrast, in Forbes, *et al.*, as pointed out in the Office Action at pages 3 and 8, whenever Forbes, *et al.* uses plasma, it is used in formation of a layer. Accordingly, Forbes, *et al.* fails to teach the features of the invention set forth in the amended claims. Specifically, Forbes, *et al.* fails to
5 teach or suggest treatment of a completed silicon oxycarbide layer with plasma in the absence of layer formation source gases, that is, plasma treatment outside of the context of layer formation.

Loboda, *et al.* is cited as teaching silicon oxycarbide as a low-dielectric constant material. However, Loboda, *et al.* also fail to teach or suggest treatment of a completed silicon oxycarbide layer with plasma in the absence of layer formation source gases, that is, plasma treatment outside of
10 the context of layer formation.

Since neither Forbes, *et al.* nor Loboda, *et al.* teaches or suggests treatment of a completed silicon oxycarbide layer with plasma in the absence of layer formation source gases, that is, plasma treatment outside of the context of layer formation, there is no combination of the references which would result in providing such teaching or suggestion. That is, the cited combination fails to teach
15 or suggest elements of the invention set forth in the amended claims. Accordingly, it is believed that the claims cannot properly be rejected under 35 U.S.C. § 103(a) based on Forbes, *et al.* and Loboda, *et al.*, and reconsideration of the rejections is requested.

The Examiner again characterizes the applicants' arguments as piecemeal analysis. The Examiner is respectfully referred to the immediately preceding paragraph at page 8 lines 11 through
20 17 herein where arguments regarding the combination of the cited references are presented.

Analogous discussions against the combination of references, which have been objected to by the Examiner, have been presented in previous papers filed by the applicants. It is true that the contents of the Forbes, *et al.* reference are discussed herein at page 7 line 18 through page 8 line 6, and the contents of the Loboda, *et al.* are discussed herein in the paragraph at page 8 lines 7 through 10.

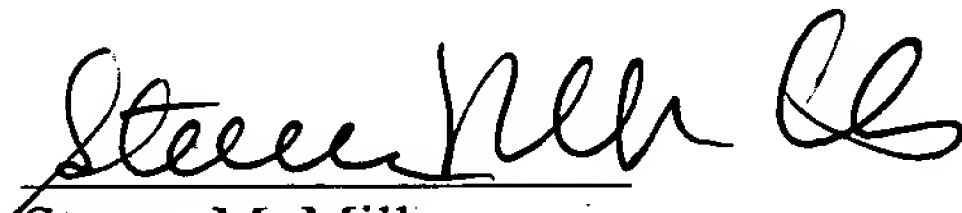
25 However, the point of the applicants' arguments is that the combination of the references fails to teach or suggest elements set forth in the amended claims. This is a legally permissible argument, and the applicants find it very difficult, if not impossible, to present credible arguments regarding what a combination of prior art references teaches without discussing the contents of the references.

Application Number 09/994,508
Amendment dated December 15, 2004
Reply to Office Action of September 15, 2004

In view of the amendments to the claims and the foregoing remarks, it is believed that all claims pending in the application are in condition for allowance, and such allowance is respectfully solicited. If a telephone conference will expedite prosecution of the application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

Date: 12/15/04
Mills & Onello, LLP
Eleven Beacon Street, Suite 605
Boston, MA 02108
Telephone: (617) 994-4900
Facsimile: (617) 742-7774
J:\SAM\0298\amendb\amendmentb.wpd


Steven M. Mills
Registration Number 36,610
Attorney for Applicants